

NSWC Carderock Embraces Human Centered Design to Strengthen its Innovative Culture

By NSWC Carderock Division Public Affairs

Naval Surface Warfare Center, Carderock Division (NSWCCD) has embraced human-centered design (HCD) as a vehicle to strengthen its culture of innovation.

According to Carderock Director for Innovation Garth Jensen, Carderock's adoption of HCD comes from an understanding that "innovation is a social phenomenon, as much as it is a technological phenomenon. Once you understand innovation as a social phenomenon, then it's only natural to pursue HCD because it starts by putting people at the center – understanding how people's complex needs, beliefs and behaviors inform the problem and the solution."



170112-N-OR058-017 (West Bethesda, Md.) Garth Jensen, the director of innovation at Naval Surface Warfare Center, Carderock Division, walks through steps of a process using human-centered design methods at a training session in January 2017 (U.S. Navy photo by Ryan Hanyok/Released)

Social change theory points to the need for a small, yet critical mass of people to be engaged before organizational change can truly occur. To date, Carderock has sent more than 50 employees through the Office of Personnel Management's Innovation Lab for its human-centered design course, and, according to Jensen, "Our numbers put us right on the cusp of that tipping point."

"As far as I can tell, Carderock is leading the way in getting our employees exposed to human-centered design, and we hope that continues and that we can be the leading example for this type of social change across the Department of the Navy," Garth said.

What is this social change that HCD represents? Jensen describes it in terms of ***mindsets*** and ***skillsets*** which reinforce each other. The first mindset involves being truly human centered, which is reinforced by the skillset of ***ethnography*** – being both a participant ***and*** an observer of human behavior in a way that results in a deep understanding of how people experience a given situation. Next, HCD teaches a set of tools centered on designing new solutions, including tools for problem re-framing and idea generation. This mindset involves learning not to settle for simply accepting the original problem as given. Instead, designers discover that the process of framing and iteratively re-framing the problem opens up the solution space and often yields

major insights that weren't apparent before. The final mindset or skillset is perhaps the biggest – what Jensen has come to call ***“prototyping as learning.”*** In this phase, design practitioners focus on getting a minimum fidelity version of their solution into the hands of an actual human sooner rather than later. The focus is on ***“rough and ready” over “polished and perfect,”*** with the ***prototype acting as the conversation piece*** in a rich dialogue between designer and end user. When this kind of conversation takes place, the result, according to Jensen, is the ***elicitation and exchange of both tacit and explicit knowledge***, which then feeds into the next iteration of the design solution.

An aspect of HCD that Jensen said he finds most appealing is that nearly everyone who takes the course puts it to use in their work life once they return to Carderock. Jensen chalks this up to OPM's rigorous focus on experiential learning. Typically, students receive a module of theory, followed immediately by a module of practice based on the theory they have just learned, with a heavy emphasis on feedback by instructors during the practical sessions. Additionally, students are encouraged to bring their own “wicked problem” to the course and they get a chance to work on that problem in a team setting as their capstone exercise. Some recent examples where Carderock employees have applied HCD include:

- Piloting a longitudinal study of the New Hire Bridge Employee Resource Group.
- Soliciting employee input for Carderock's long-range science and technology plan.
- Planning and conducting Carderock's academic outreach day.
- Hosting an “Innovation Café” around the topic, “How might we measure innovation at Carderock?”
- Shaping the charter and initial approach for the Communications Community of Interest.

Skylar Stephens, an engineer with the Criteria and Risk Assessment Branch at Carderock, took the HCD class in October and said he plans on using what he learned about HCD for his Technical Director's Innovation Challenge (TDIC) project, “Producibility Structural Design Optimization.”

“Trying to understand through face-to-face interviews how different sets of people, like design engineers, shore-side engineers, shipbuilders and headquarters, think about producibility will aid in the development of more appropriate solutions,” Stephens said. “The HCD process we learned and implemented was fantastic for synthesizing and then analyzing qualitative research, and I am very thankful for the opportunity to have attended such a wonderful professional development course.”

Perhaps the biggest change has been to Carderock's culture as a whole, according to Jack Templeton, Carderock's chief technology officer, who sees human-centered design creating a workforce and leadership appreciation that ***all*** opinions, perspectives and concerns matter. ***Everyone*** can have a voice in characterizing command challenges and in designing solutions. At Carderock and in some cases across the NAVSEA Warfare Centers, Templeton said he has seen improvements in the interactions between Division communities of practice; between the technical and business communities; and between junior and senior members of the workforce. Individuals who previously felt hindered in suggesting solutions are now putting such thoughts and ideas forward as successful ventures. Members of the workforce are now encouraged to take greater risks in offering innovative ideas and challenging existing paradigms. Perhaps as critical

as the specific innovation "tools" employed is the value of the collaboration which is realized by embracing these approaches.

“Human-centered design is not some new buzzword,” said Ryan Hanyok, a photographer at Carderock who took the HCD class in January of 2017. “It’s a way of helping people step back and see how the big picture collides with the smaller realities of our daily work to then help us make better solutions. It’s specifically about designing better products and taking the best ideas and allowing them to come through sooner.”

For more information on The Lab @ OPM and Human Centered Design: <https://lab.opm.gov/>